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## *Agricultural Transportation Challenges for the 21<sup>st</sup> Century*

# **Changing Demands for Port Infrastructure and Maritime Services**

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### **Issue**

Maritime ports are getting busier, ships are getting larger, and the mix of cargo being transported is becoming more diverse. These increased demands for port infrastructure and services are also causing ports to run out of land, requiring them to dredge deeper harbors and waterways and to invest in expensive shipment-handling technology. As ships are being built larger and sailing greater distances and carriers are entering into more alliances, maritime arrivals at ports are increasingly bunched. Ports that are unable to adapt to these changing demands for port infrastructure and services will lose out to competitor ports for cargo throughput. As a long-term transportation issue for U.S. agriculture, the volume and value of U.S. high-value and value-added exports of agricultural products are directly affected by the type of port services that are available.

### **Background**

Exported agricultural commodities and products from the United States move predominately as waterborne movements through the nation's ports. The mix of services offered by ports and ship carriers facilitates agricultural exports. For instance, container ship carriers offer regularly scheduled services and refrigerated containers to transport time-sensitive, high-value products. Exports are often transported through particular ports because of their close proximity to a port, available port services, and accessibility to destination markets. For example, approximately 70 percent of all bulk export grain is moved through U.S. Gulf ports after being barged down the Mississippi River from production areas.

Between 1980 and 1994, world trade that was moved through ports and transported in either a container, break bulk, or dry bulk vessel increased 16 percent to 2.1 billion metric tons. Movements by container over that time period increased 200 percent to 336 million tons, while break bulk and dry bulk increased 4 percent to 1.8 billion tons. This increased trade resulted as world economies grew and transportation services became more sophisticated. The transportation system has also changed to accommodate the special requirements of exports for just-in-time operations and for shippers who need reliable transportation that is fast and efficient for the shipment of time-sensitive products. To meet the needs for these types of movements, larger and faster vessels are being used in the maritime industry. For agricultural shippers, a larger vessel means greater capacity to transport commodities and products, while a faster vessel

reduces transit time, which is important for time-sensitive, perishable commodities like apples and grapes.

The export of many agricultural commodities has benefitted from technological advances in refrigerated maritime containers. Perishable agricultural commodities, requiring a chilled or frozen environment, were traditionally transported on dedicated reefer ships. However, the number of reefer ships used to transport agricultural commodities has fallen as container ships have increased capacity for refrigerated containers.<sup>1</sup> Over the period 1995 to 1997, 83 container ships were built with a total capacity of 62,000 20-foot equivalent units. Ten percent of those container slots were built to accommodate refrigerated containers, which is equivalent to seventeen percent of the 366,600 cubic feet of total refrigerated capacity in the world.

However, these larger vessels, which make regularly scheduled calls, have strained ports that are already struggling to provide adequate port services. A larger vessel requires a deeper draft, more equipment to unload and load cargo, more storage to hold cargo waiting for loading and unloading, special areas for servicing refrigerated containers, greater accessibility into the hinterland, and more services to accommodate the vessel. Ports are purchasing larger parcels of land for storage and on-dock rail services, dredging waterways and harbors to a deeper draft for the larger vessels, and building larger docks with faster and more reliable systems to unload and load cargo. However, before dredging can occur, extensive environmental reviews are required. At the Ports of New York/New Jersey, these environmentally related dredging delays have prompted major ship carriers to consider other ports that can accommodate larger ships. At the Ports of Los Angeles/Long Beach, California, highway and rail congestion are slowing down cargo movement going through the ports, which delays the ship and its cargo. For agricultural products, this can be quite expensive given their low profit margins and perishable characteristics. For example, trucks haul cherries produced in Washington State to the ports for export by water. However, roughly two-thirds of the transit time for these cherries occurs on congested highways within 50 miles of the ports.

For ports, such capital investments are difficult to finance and implement. Local public support is diminishing, and funding from State and Federal sources is drying up. As a fixed facility, ports require large capital expenditures. In 1996, port capital expenditures totaled \$1.3 billion. Nearly three-quarters of the expenditures were used to build new facilities while the remaining one-quarter went to modernization and rehabilitation projects. In order to finance new construction, ports attempt to sign long-term leases with carriers, stevedores, and companies shipping commerce, for instance, signing a lease with an export grain elevator operator to cover infrastructure expenditures and keep facilities technologically advanced. How well ports provide services to accommodate ship size and growth in waterborne commerce ultimately affects the volume and value of U.S. agricultural exports.

## **Implications**

U.S. agricultural exports have benefitted greatly from port expansion and improvements in

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<sup>1</sup> A refrigerated container holds approximately 1,000 cubic feet of cargo.

ocean transportation. Technological advances in refrigerated containers have extended the life of high-value and value-added, perishable products. Yet, larger vessels are constraining expansion efforts at ports, which, in turn, affects the international competitiveness of agricultural products exported through those ports. Ports are also investing in expensive facilities and technology and in the dredging to keep harbors and ship channels at drafts deep enough to accommodate larger ships. If larger ships cannot call upon a port because of poor draft conditions, they will go to a port that has adequate access. For agricultural exports, this could mean greater traveling distances to another port, thus adding to the cost of transport and lowering the returns to producers.

Inland access by rail, barge, or truck to a port is important for agricultural products. If inland transportation infrastructure delays cargo movements to a port, then perishable commodities may deteriorate and the timely loading of bulk products may become more expensive if ship loading is delayed. Exporters of agricultural products logistically situate movements with the cost of transportation factored into delivery.

Larger ships and increased trade will continue to challenge ports. Ports, vessel operators, and shippers must all work together to identify areas of improvement to maintain the competitiveness of U.S. agriculture. Long-term port issues that will affect the U.S. export of agricultural products include alternative financing strategies for port projects, the utilization of port storage facilities, improvements in inland access, the dredging of waterways and channels, and advancements in cargo loading and unloading technologies.

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